13/05/2024
ASSESMENT-1

Scenario: Library Management System

Entities:

Book: Contains information about each book available in the library.

Attributes: Book_ID (Primary Key), Title, Author, ISBN, Genre

Member: Represents the library members who can borrow books.

Attributes: Member_ID (Primary Key), Name, Address, Email, Phone

Borrowing: Records the borrowing activity, showing which member borrowed which book and when.

Attributes: Borrowing_ID (Primary Key), Member_ID (Foreign Key), Book_ID (Foreign Key), Borrow_Date, Return_Date

- let's define the relationships:

Book to Borrowing (1-to-Many): A book can be borrowed by many members, but at any given time, it can be borrowed by only one member.

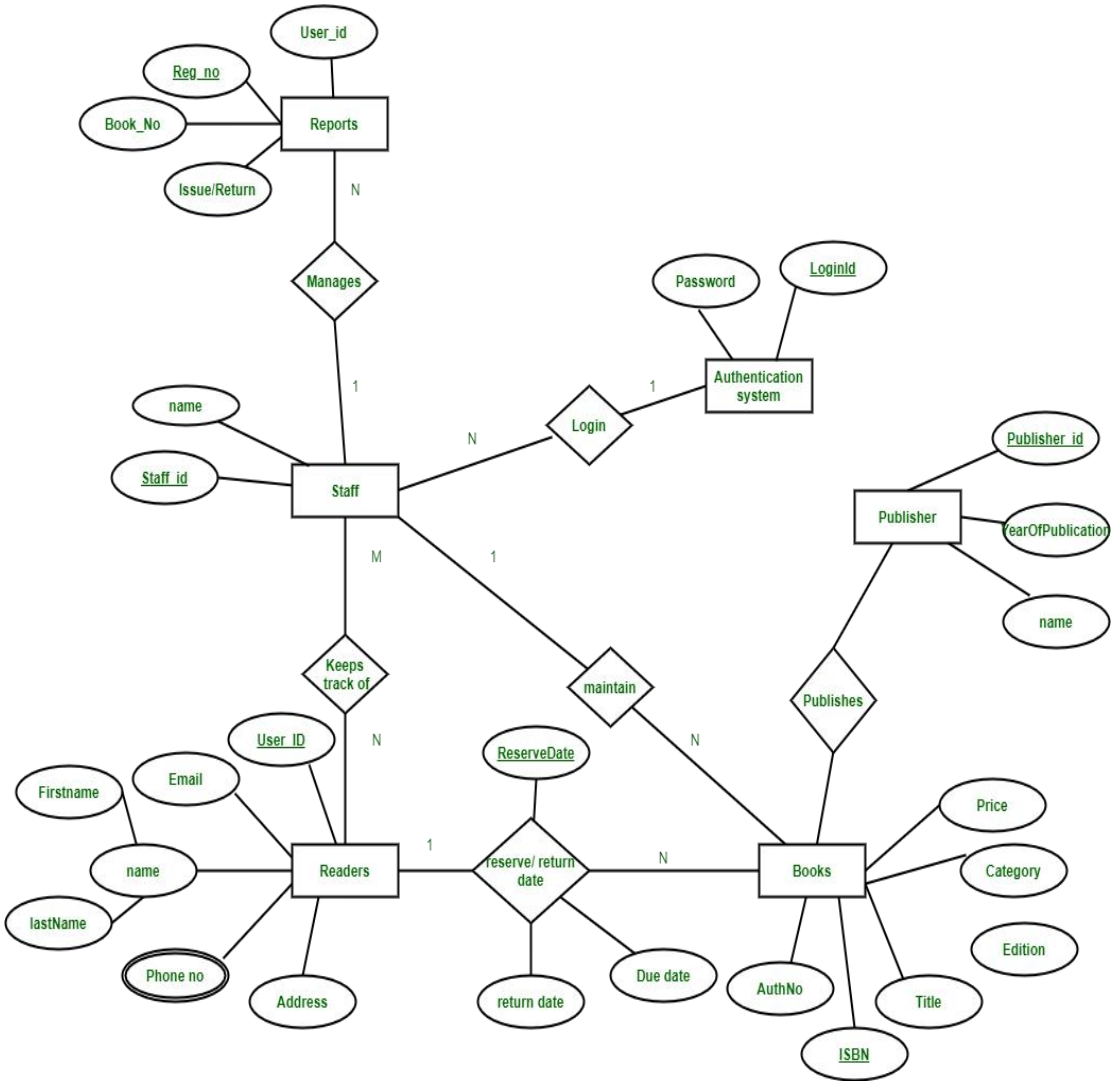
Member to Borrowing (1-to-Many): A member can borrow multiple books, but each borrowing record belongs to only one member.

- let's ensure normalization up to the third normal form (3NF):

First Normal Form (1NF): Each attribute should contain only atomic values. All attributes are atomic in our scenario.

Second Normal Form (2NF): No partial dependencies. Each non-key attribute must depend on the entire primary key. We don't have composite primary keys, so this condition is automatically met.

Third Normal Form (3NF): No transitive dependencies. Non-key attributes should not depend on other non-key attributes. In our scenario, there are no transitive dependencies.



In this ER diagram:

The primary keys are underlined.

- The relationships are depicted by lines connecting the entities.
- The cardinality (1-to-Many) is shown using the "1" and "n" notation.

This ER diagram is normalized up to the third normal form and represents the entities, relationships, attributes, and cardinality in the library management system scenario.